



#10

act cgt ctg gcc aat gct gga gta aaa gaa ctg gcc aag tac gtc gac 385  
Thr Arg Leu Ala Asn Ala Gly Val Lys Glu Leu Ala Lys Tyr Val Asp  
115 120 125

acc tta att gtc gtg ccc aac cag aac ttg ctg gct ttg gca gac aag 433  
 Thr Leu Ile Val Val Pro Asn Gln Asn Leu Leu Ala Leu Ala Asp Lys  
 130 135 140

agc acg acc atg ttg gaa gcc ttc cgg tat gcc gac gac gtg ctg ctt 481  
 Ser Thr Thr Met Leu Glu Ala Phe Arg Tyr Ala Asp Asp Val Leu Leu  
 145 150 155 160

gaa gga gtt aaa ggt gtc acg gac ttg atc gtt cgc ccg gga ctt atc 529  
 Glu Gly Val Lys Gly Val Thr Asp Leu Ile Val Arg Pro Gly Leu Ile  
 165 170 175

aat ttg 535  
 Asn Leu

<210> 2  
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 <212> PRT  
 <213> Phytophthora infestans

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 Gln Ala Leu Gly Arg Ser Leu Ala Pro His Lys Ile Thr Leu Gly Lys  
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 Asp Ile Thr Lys Gly Leu Gly Ala Gly Ser Lys Pro Glu Leu Gly Lys  
 35 40 45  
 Arg Ser Ala Glu Gln Gln Lys Val Asp Ile Gln Arg Met Leu Gln Asp  
 50 55 60  
 Ser Asn Met Leu Phe Ile Thr Gly Gly Met Gly Gly Thr Cys Thr  
 65 70 75 80  
 Gly Ala Ala Pro Val Val Ala Ser Val Ala Arg Glu Leu Gly Ile Leu  
 85 90 95  
 Thr Val Gly Val Val Ser Thr Pro Phe Arg Ser Glu Gly Pro Asn Arg  
 100 105 110  
 Thr Arg Leu Ala Asn Ala Gly Val Lys Glu Leu Ala Lys Tyr Val Asp  
 115 120 125  
 Thr Leu Ile Val Val Pro Asn Gln Asn Leu Leu Ala Leu Ala Asp Lys  
 130 135 140  
 Ser Thr Thr Met Leu Glu Ala Phe Arg Tyr Ala Asp Asp Val Leu Leu  
 145 150 155 160  
 Glu Gly Val Lys Gly Val Thr Asp Leu Ile Val Arg Pro Gly Leu Ile  
 165 170 175  
 Asn Leu

<210> 3  
 <211> 220  
 <212> DNA  
 <213> Phytophthora infestans

<220>  
 <221> CDS  
 <222> (2)...(220)

<223> cDNA

<400> 3

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Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala
  1             5             10             15

cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct 97
Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
      20             25             30

gaa ttg act gga gga ttg ggc tgt ggc gct aac ccc gaa gtt ggc cga 145
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg
      35             40             45

gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt cag ggt 193
Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly
      50             55             60

gca aac atg atg ttt gtt act gcg ggt 220
Ala Asn Met Met Phe Val Thr Ala Gly
  65             70
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<210> 4

<211> 73

<212> PRT

<213> Phytophthora infestans

<400> 4

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Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
      20             25             30
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg
      35             40             45
Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly
      50             55             60
Ala Asn Met Met Phe Val Thr Ala Gly
  65             70
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<210> 5

<211> 388

<212> DNA

<213> Phytophthora infestans

<220>

<221> intron

<222> (143)...(204)

<221> intron

<222> (265)...(370)

<221> CDS

<222> (2)...(142)

<221> CDS  
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<221> CDS  
<222> (371)...(388)

<400> 5  
c gcg cgc ggc ctg cag ggt gtg gag ttt ctt gtt tgc aac acg gat gct 49  
Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala  
1 5 10 15  
cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct 97  
Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro  
20 25 30  
gaa ttg act gga gga ttg ggc tgt ggc gct aac ccc gaa gtt ggg 142  
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly  
35 40 45  
tgagtgactg cgtaaaagcg gtattttttt ttcttacata ctgaccttaa ctattgatta 202  
gc cga gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt 249  
Arg Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val  
50 55 60  
cag ggt gca aac atg gtttgtctcg gtgacattgc gtttctcaag acgttccgat 304  
Gln Gly Ala Asn Met  
65  
ttgagcgaat gacttggtga tgacaacgat atgattatta acttctgctt ttatgcccct 364  
atatag atg ttt gtt act gcg ggt 388  
Met Phe Val Thr Ala Gly  
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<210> 6  
<211> 20  
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<213> Artificial Sequence

<220>  
<223> PCR primer

<221> misc\_feature  
<222> (1)...(20)  
<223> n = inosine

<400> 6  
aaygcngtna ayaayatgat 20

<210> 7  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> PCR primer

<221> misc\_feature

<222> (1)...(20)

<223> n = inosine

<400> 7

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20

<210> 8

<211> 20

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<220>

<223> PCR primer

<221> misc\_feature

<222> (1)...(17)

<223> n = inosine

<400> 8

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<210> 9

<211> 1423

<212> DNA

<213> Phytophthora infestans

<220>

<221> CDS

<222> (2)...(1261)

<400> 9

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Met Ala Ile Ser Arg Met Lys Ala Ala Ala Met Ala Leu Leu Arg Ala

1 5 10 15

cgc cag acc tcc cag tcc gcc act caa cac ctc gcc ttc tct act gaa 97

Arg Gln Thr Ser Gln Ser Ala Thr Gln His Leu Ala Phe Ser Thr Glu

20 25 30

gcc act gat gct gca gct gcc gcg tta cgc atg ggc ttt aaa aag gct 145

Ala Thr Asp Ala Ala Ala Ala Ala Leu Arg Met Gly Phe Lys Lys Ala

35 40 45

cga aaa gac gag gat ggc ggt gtg aaa gtg ggg ctg gag gca gag ccc 193

Arg Lys Asp Glu Asp Gly Gly Val Lys Val Gly Leu Glu Ala Glu Pro

50 55 60

gat tca cca aca gat gtg agc gcc gtt tcg acg cca gta gta gag aag 241

Asp Ser Pro Thr Asp Val Ser Ala Val Ser Thr Pro Val Val Glu Lys

65 70 75 80

aag ctc gtg ccg cca gcc atg agc tcc aca cag cca ctt tgg ctc aca 289

Lys Leu Val Pro Pro Ala Met Ser Ser Thr Gln Pro Leu Trp Leu Thr

85										90										95										
cag	gac	cat	cct	gtg	aca	gac	ctg	tcg	ggc	ttt	gca	ccg	aag	att	gtg	337														
Gln	Asp	His	Pro	Val	Thr	Asp	Leu	Ser	Gly	Phe	Ala	Pro	Lys	Ile	Val															
			100					105					110																	
gtg	gtt	ggc	gtc	gga	gga	gct	gga	gga	aat	gcg	gtg	aac	aac	atg	atc	385														
Val	Val	Gly	Val	Gly	Gly	Ala	Gly	Gly	Asn	Ala	Val	Asn	Asn	Met	Ile															
		115					120					125																		
gcg	cgc	ggc	ctg	cag	ggg	gtg	gag	ttt	ctt	gtt	tgc	aac	acg	gat	gct	433														
Ala	Arg	Gly	Leu	Gln	Gly	Val	Glu	Phe	Leu	Val	Cys	Asn	Thr	Asp	Ala															
	130					135					140																			
cag	cac	tta	cgc	acg	acg	ctg	acg	gag	aac	cgc	gtt	cag	atg	gct	cct	481														
Gln	His	Leu	Arg	Thr	Thr	Leu	Thr	Glu	Asn	Arg	Val	Gln	Met	Ala	Pro															
145					150				155						160															
gaa	ttg	act	gga	gga	ctg	ggc	tgt	ggc	gct	aac	ccc	gaa	gtt	ggc	cga	529														
Glu	Leu	Thr	Gly	Gly	Leu	Gly	Cys	Gly	Ala	Asn	Pro	Glu	Val	Gly	Arg															
			165					170						175																
gag	gcg	gca	gag	gcc	gcg	att	gat	gag	att	ttg	gag	cgc	gtt	cag	ggg	577														
Glu	Ala	Ala	Glu	Ala	Ala	Ile	Asp	Glu	Ile	Leu	Glu	Arg	Val	Gln	Gly															
			180				185						190																	
gca	aac	atg	atg	ttt	gtt	act	gcg	ggg	atg	ggg	ggc	gga	aca	ggg	aca	625														
Ala	Asn	Met	Met	Phe	Val	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr	Gly	Thr															
		195					200				205																			
ggg	gca	gca	ccc	gtc	att	gct	cag	gct	gcc	tta	gat	gct	ggg	atc	ctc	673														
Gly	Ala	Ala	Pro	Val	Ile	Ala	Gln	Ala	Ala	Leu	Asp	Ala	Gly	Ile	Leu															
	210					215					220																			
acc	gta	gct	gtc	gtt	act	aag	ccg	ttc	cgg	ttt	gag	gga	aac	aac	cgt	721														
Thr	Val	Ala	Val	Val	Thr	Lys	Pro	Phe	Arg	Phe	Glu	Gly	Asn	Asn	Arg															
225					230				235						240															
gca	aag	ctt	gcg	gca	caa	ggc	ctc	gct	gaa	ctg	aag	gat	agc	gtc	gat	769														
Ala	Lys	Leu	Ala	Ala	Gln	Gly	Leu	Ala	Glu	Leu	Lys	Asp	Ser	Val	Asp															
			245					250					255																	
acg	atg	ctt	gtg	atc	ccg	aac	caa	aac	ttg	ttc	aac	atg	tca	aat	gag	817														
Thr	Met	Leu	Val	Ile	Pro	Asn	Gln	Asn	Leu	Phe	Asn	Met	Ser	Asn	Glu															
			260					265					270																	
cgc	acc	tcg	ttg	atg	gac	gca	ttc	aga	atg	gcg	gac	aat	gtg	ctt	ctg	865														
Arg	Thr	Ser	Leu	Met	Asp	Ala	Phe	Arg	Met	Ala	Asp	Asn	Val	Leu	Leu															
		275					280					285																		
gac	ggg	gtc	aag	aac	att	tcg	gat	ttg	atg	gtg	atg	cct	ggg	ctc	att	913														
Asp	Gly	Val	Lys	Asn	Ile	Ser	Asp	Leu	Met	Val	Met	Pro	Gly	Leu	Ile															
	290					295					300																			
aac	ctt	gac	ttt	gcg	gat	gtt	caa	tcg	gtc	atg	caa	aat	atg	gga	aac	961														
Asn	Leu	Asp	Phe	Ala	Asp	Val	Gln	Ser	Val	Met	Gln	Asn	Met	Gly	Asn															
305					310					315					320															

[illegible]

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<210> 10
<211> 420
<212> PRT
<213> Phytophthora infestans
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Arg	Gln	Thr	Ser	Gln	Ser	Ala	Thr	Gln	His	Leu	Ala	Phe	Ser	Thr	Glu
			20					25					30		
Ala	Thr	Asp	Ala	Ala	Ala	Ala	Ala	Leu	Arg	Met	Gly	Phe	Lys	Lys	Ala
		35					40					45			
Arg	Lys	Asp	Glu	Asp	Gly	Gly	Val	Lys	Val	Gly	Leu	Glu	Ala	Glu	Pro
	50					55					60				
Asp	Ser	Pro	Thr	Asp	Val	Ser	Ala	Val	Ser	Thr	Pro	Val	Val	Glu	Lys
65					70					75					80
Lys	Leu	Val	Pro	Pro	Ala	Met	Ser	Ser	Thr	Gln	Pro	Leu	Trp	Leu	Thr
				85					90					95	
Gln	Asp	His	Pro	Val	Thr	Asp	Leu	Ser	Gly	Phe	Ala	Pro	Lys	Ile	Val
			100					105					110		
Val	Val	Gly	Val	Gly	Gly	Ala	Gly	Gly	Asn	Ala	Val	Asn	Asn	Met	Ile
		115					120					125			
Ala	Arg	Gly	Leu	Gln	Gly	Val	Glu	Phe	Leu	Val	Cys	Asn	Thr	Asp	Ala
	130					135					140				

Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro  
 145 150 155 160  
 Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg  
 165 170 175  
 Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly  
 180 185 190  
 Ala Asn Met Met Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr  
 195 200 205  
 Gly Ala Ala Pro Val Ile Ala Gln Ala Ala Leu Asp Ala Gly Ile Leu  
 210 215 220  
 Thr Val Ala Val Val Thr Lys Pro Phe Arg Phe Glu Gly Asn Asn Arg  
 225 230 235 240  
 Ala Lys Leu Ala Ala Gln Gly Leu Ala Glu Leu Lys Asp Ser Val Asp  
 245 250 255  
 Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Asn Met Ser Asn Glu  
 260 265 270  
 Arg Thr Ser Leu Met Asp Ala Phe Arg Met Ala Asp Asn Val Leu Leu  
 275 280 285  
 Asp Gly Val Lys Asn Ile Ser Asp Leu Met Val Met Pro Gly Leu Ile  
 290 295 300  
 Asn Leu Asp Phe Ala Asp Val Gln Ser Val Met Gln Asn Met Gly Asn  
 305 310 315 320  
 Ala Met Met Gly Ser Gly Glu Ala Asp Gly Glu Asn Arg Ala Leu Arg  
 325 330 335  
 Ala Ala Glu Asp Ala Leu Ala Asn Pro Leu Leu Gly Asp Ile Ser Ile  
 340 345 350  
 Lys Asp Ala Lys Gly Met Ile Val Asn Ile Thr Gly Gly Ser Asp Leu  
 355 360 365  
 Thr Leu Phe Glu Val Asp Glu Ala Ala Glu Arg Val Thr Arg Glu Leu  
 370 375 380  
 Asp Asp Pro His Ala Asn Ile Ile Phe Gly Ser Thr Phe Asp Asp Ser  
 385 390 395 400  
 Leu Gly Gly Lys Leu Arg Val Ser Val Val Ala Thr Gly Ile Ala Asp  
 405 410 415  
 Pro Asp Lys Leu  
 420

<210> 11

<211> 583

<212> PRT

<213> Agrobacterium tumefaciens

<400> 11

Met Thr Ile Gln Leu Gln Lys Pro Asp Ile Thr Glu Leu Lys Pro Arg  
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 Ile Thr Val Phe Gly Val Gly Gly Gly Gly Asn Ala Val Asn Asn  
 20 25 30  
 Met Ile Thr Val Gly Leu Gln Gly Val Asp Phe Val Val Ala Asn Thr  
 35 40 45  
 Asp Ala Gln Ala Leu Thr Met Thr Lys Ala Asp Arg Val Ile Gln Leu  
 50 55 60  
 Gly Val Asn Val Thr Glu Gly Leu Gly Ala Gly Ser Gln Pro Glu Val  
 65 70 75 80  
 Gly Arg Ala Ala Ala Glu Glu Cys Ile Asp Glu Ile Ile Asp His Leu  
 85 90 95  
 Asn Gly Thr His Met Cys Phe Val Thr Ala Gly Met Gly Gly Gly Thr



[illegible]

Pro Ser Ser Ser Ser His His Asp Asp Asp Gln Leu Glu Ile Pro Ala  
565 570 575  
Phe Leu Arg Arg Gln Ser Asn  
580

<210> 12  
<211> 590  
<212> PRT  
<213> Sinorhizobium meliloti

<400> 12  
Met Ala Ile Asn Leu Gln Lys Pro Asp Ile Thr Glu Leu Lys Pro Arg  
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Ile Thr Val Phe Gly Val Gly Gly Gly Gly Gly Asn Ala Val Asn Asn  
20 25 30  
Met Ile Thr Ala Gly Leu Gln Gly Val Asp Phe Val Val Ala Asn Thr  
35 40 45  
Asp Ala Gln Ala Leu Thr Met Thr Lys Ala Glu Arg Ile Ile Gln Met  
50 55 60  
Gly Val Ala Val Thr Glu Gly Leu Gly Ala Gly Ser Gln Pro Glu Val  
65 70 75 80  
Gly Arg Ala Ala Ala Glu Glu Cys Ile Asp Glu Ile Ile Asp His Leu  
85 90 95  
Gln Gly Thr His Met Cys Phe Val Thr Ala Gly Met Gly Gly Gly Thr  
100 105 110  
Gly Thr Gly Ala Ala Pro Ile Val Ala Gln Ala Ala Arg Asn Lys Gly  
115 120 125  
Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Gly  
130 135 140  
Arg Arg Met Arg Ile Ala Asp Gln Gly Ile Ser Asp Leu Gln Lys Ser  
145 150 155 160  
Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala  
165 170 175  
Asn Asp Lys Thr Thr Phe Ala Asp Ala Phe Ala Met Ala Asp Gln Val  
180 185 190  
Leu Tyr Ser Gly Val Ala Cys Ile Thr Asp Leu Met Val Lys Glu Gly  
195 200 205  
Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Met Arg Glu Met  
210 215 220  
Gly Arg Ala Met Met Gly Thr Gly Glu Ala Ser Gly Glu Gly Arg Ala  
225 230 235 240  
Met Ala Ala Ala Glu Ala Ala Ile Ala Asn Pro Leu Leu Asp Glu Thr  
245 250 255  
Ser Met Lys Gly Ala Gln Gly Leu Leu Ile Ser Ile Thr Gly Gly Arg  
260 265 270  
Asp Leu Thr Leu Phe Glu Val Asp Glu Ala Ala Thr Arg Ile Arg Glu  
275 280 285  
Glu Val Asp Pro Asp Ala Asn Ile Ile Leu Gly Ala Thr Phe Asp Glu  
290 295 300  
Glu Leu Glu Gly Leu Ile Arg Val Ser Val Val Ala Thr Gly Ile Asp  
305 310 315 320  
Arg Thr Ala Ala Glu Val Ala Gly Arg Ser Ala Asp Phe Arg Pro Val  
325 330 335  
Ala Pro Lys Pro Ile Val Arg Pro Ser Ala Ala Val Pro Ala Gln Pro  
340 345 350  
Gln Pro Thr Val Ser Leu Gln Pro Val Pro Gln Pro Gln Pro Val Gln

355					360					365					
Gln	Pro	Leu	Gln	Gln	Gln	Asn	Val	Asp	His	Ile	Ala	Leu	Ala	Ile	Arg
370						375					380				
Glu	Ala	Glu	Met	Glu	Arg	Glu	Leu	Asp	Ile	Ala	Ala	Arg	Ala	Gln	Val
385					390					395					400
Ala	Ala	Pro	Ala	Pro	Gln	Pro	Gln	Pro	His	Leu	Gln	Glu	Glu	Ala	Phe
				405					410					415	
Arg	Pro	Gln	Ser	Lys	Leu	Phe	Ala	Gly	Val	Ala	Pro	Thr	Glu	Ala	Ala
			420					425					430		
Pro	Val	Met	Arg	Pro	Ala	Gln	Pro	Ala	Pro	Arg	Pro	Val	Glu	Met	Gln
		435					440					445			
Ala	Pro	Val	Gln	Pro	Gln	Met	Gln	Ala	Gln	Pro	Val	Gln	Gln	Glu	Pro
450					455						460				
Thr	Gln	Val	Val	Arg	Gln	Gln	Ala	Glu	Pro	Val	Arg	Met	Pro	Lys	Val
465					470					475					480
Glu	Asp	Phe	Pro	Pro	Val	Val	Lys	Ala	Glu	Met	Asp	Tyr	Arg	Thr	Gln
				485					490					495	
Pro	Ala	Pro	Ala	His	Gln	Glu	Glu	Arg	Gly	Pro	Met	Gly	Leu	Leu	Asn
			500					505					510		
Arg	Ile	Thr	Ser	Ser	Leu	Gly	Leu	Arg	Glu	Arg	Glu	Ala	Thr	Asn	Val
		515					520					525			
Ser	Ser	Asp	Met	Thr	Ala	Ala	Ala	Pro	Ser	Ala	Ala	Ser	Gln	Gln	Arg
530					535						540				
Arg	Pro	Leu	Ser	Pro	Glu	Ala	Ser	Leu	Tyr	Ala	Pro	Arg	Arg	Gly	Gln
545					550					555					560
Leu	Asp	Asp	His	Gly	Arg	Ala	Ala	Pro	Gln	Met	Arg	Ser	His	Glu	Asp
				565					570					575	
Asp	Gln	Leu	Glu	Ile	Pro	Ala	Phe	Leu	Arg	Arg	Gln	Ser	Ser		
		580						585					590		

<210> 13  
 <211> 581  
 <212> PRT  
 <213> Bartonella clarridgeiae

<400> 13

Met	Thr	Ile	Asn	Leu	His	Arg	Pro	Asp	Ile	Ala	Glu	Leu	Lys	Pro	Arg
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Ile	Thr	Val	Phe	Gly	Val	Gly	Gly	Gly	Gly	Asn	Ala	Val	Asn	Asn	
		20						25				30			
Met	Ile	Asn	Ala	Gly	Leu	Gln	Gly	Val	Asp	Phe	Val	Val	Ala	Asn	Thr
		35					40					45			
Asp	Ala	Gln	Ala	Leu	Ala	Met	Ser	Lys	Ala	Glu	Arg	Val	Ile	Gln	Leu
50					55					60					
Gly	Ala	Ala	Val	Thr	Glu	Gly	Leu	Gly	Ala	Gly	Ala	Leu	Pro	Glu	Val
65					70				75					80	
Gly	Arg	Ala	Ala	Ala	Asp	Glu	Cys	Ile	Asp	Glu	Ile	Ile	Asp	His	Leu
				85				90					95		
Ala	Asp	Ser	His	Met	Val	Phe	Ile	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr
		100						105				110			
Gly	Thr	Gly	Ala	Ala	Pro	Val	Val	Ala	Asn	Ala	Ala	Arg	Glu	Lys	Gly
		115					120					125			
Ile	Leu	Thr	Val	Gly	Val	Val	Thr	Lys	Pro	Phe	Gln	Phe	Glu	Gly	Ala
130						135				140					
Arg	Arg	Met	Lys	Thr	Ala	Glu	Ala	Gly	Ile	Glu	Glu	Leu	Gln	Lys	Ser
145					150					155					160

<210> 14

<211> 452  
 <212> PRT  
 <213> Rickettsia prowazekii

<400> 14  
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 20 25 30  
 Met Ile His Ala Asn Leu Gln Gly Ala Asn Phe Val Val Ala Asn Thr  
 35 40 45  
 Asp Ala Gln Ser Leu Glu His Ser Leu Cys Ile Asn Lys Ile Gln Leu  
 50 55 60  
 Gly Val Ser Thr Thr Arg Gly Leu Gly Ala Gly Ala Ser Pro Glu Val  
 65 70 75 80  
 Gly Ala Leu Ala Ala Gln Glu Ser Glu Asn Glu Ile Arg Ser Ser Leu  
 85 90 95  
 Glu Asn Ser Asn Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr  
 100 105 110  
 Gly Thr Gly Ser Ala Pro Ile Ile Ala Arg Ile Ala Lys Glu Leu Gly  
 115 120 125  
 Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Gly  
 130 135 140  
 His Arg Met Lys Thr Ala Asp Lys Gly Leu Ile Glu Leu Gln Gln Phe  
 145 150 155 160  
 Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala  
 165 170 175  
 Asn Glu Gln Thr Thr Phe Ala Asp Ala Phe Lys Met Ala Asp Asp Val  
 180 185 190  
 Leu His Ala Gly Val Arg Gly Val Thr Asp Leu Met Ile Met Pro Gly  
 195 200 205  
 Leu Ile Asn Leu Asp Phe Ala Asp Ile Lys Ala Val Met Ser Glu Met  
 210 215 220  
 Gly Lys Ala Met Met Gly Thr Gly Glu Asp Ser Gly Glu Asp Arg Ala  
 225 230 235 240  
 Ile Lys Ala Ala Glu Ser Ala Ile Ser Asn Pro Leu Leu Asp His Ser  
 245 250 255  
 Ser Met Cys Gly Ala Arg Gly Val Leu Ile Asn Ile Thr Gly Gly Pro  
 260 265 270  
 Asp Met Thr Leu Phe Glu Val Asp Asn Ala Ala Asn Arg Ile Arg Glu  
 275 280 285  
 Glu Val Asp Asn Ile Asp Ala Asn Ile Ile Phe Gly Ser Thr Phe Asn  
 290 295 300  
 Pro Glu Leu Lys Gly Ile Ile Arg Val Ser Val Val Ala Thr Gly Ile  
 305 310 315 320  
 Asp Ala Asp Lys Val Pro Lys Tyr Lys Leu Ala Ile Asp Lys Asn Thr  
 325 330 335  
 Asn Thr Leu Pro Glu Glu Thr Tyr Asn Glu Ser Ile Ile Gln His Thr  
 340 345 350  
 Gln Ile Glu Thr Ile Pro Ser Phe Asn Ser Tyr Ser Thr Glu Asn Ile  
 355 360 365  
 Glu Ile Asn Glu Ser Ser Ile Lys Gln Asp Tyr Thr Gly Asn Glu Gln  
 370 375 380  
 Glu Leu Arg Leu His Val Asn Ala Val Asn Lys Pro Glu Asn Asn Ser  
 385 390 395 400  
 Gln Lys Ser Ser Phe Leu Gly Lys Ile Trp Glu Ser Leu Arg Thr Ser  
 405 410 415

Asn Asn Gln Thr Leu Glu Arg Lys Asn Val Ile Val Asn Thr Val Asp  
420 425 430  
Gln Asp Asn Lys Glu Ser Asp Ile His Asp Ile Pro Ala Phe Leu Arg  
435 440 445  
Lys Lys Arg Asp  
450

<210> 15  
<211> 508  
<212> PRT  
<213> *Caulobacter crescentus*

<400> 15  
Met Ala Ile Ser Leu Ser Ala Pro Arg Thr Thr Glu Leu Lys Pro Arg  
1 5 10 15  
Ile Val Val Phe Gly Val Gly Gly Ala Gly Gly Asn Ala Val Asn Asn  
20 25 30  
Met Ile Glu Ala Gly Leu Glu Gly Val Glu Phe Val Val Ala Asn Thr  
35 40 45  
Asp Ala Gln Gln Leu Gln Phe Ala Lys Thr Asp Arg Arg Ile Gln Leu  
50 55 60  
Gly Val Gln Ile Thr Gln Gly Leu Gly Ala Gly Ala His Pro Glu Val  
65 70 75 80  
Gly Met Ser Ala Ala Glu Glu Ser Phe Pro Glu Ile Gly Glu His Leu  
85 90 95  
Asp Gly Ala His Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr  
100 105 110  
Gly Thr Gly Ala Ala Pro Ile Ile Ala Lys Cys Ala Arg Glu Arg Gly  
115 120 125  
Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Arg  
130 135 140  
His Arg Met Arg Leu Ala Asp Ser Gly Ile Gln Glu Leu Gln Arg Tyr  
145 150 155 160  
Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Val Ala  
165 170 175  
Asn Glu Arg Thr Thr Phe Ala Glu Ala Phe Gly Met Ala Asp Gln Val  
180 185 190  
Leu His Ser Gly Val Arg Ser Ile Thr Asp Leu Met Val Leu Pro Gly  
195 200 205  
Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Thr Val Met Thr Glu Met  
210 215 220  
Gly Lys Ala Met Met Gly Thr Gly Glu Gly Thr Ala Glu Asp Arg Ala  
225 230 235 240  
Leu Met Ala Ala Gln Asn Ala Ile Ala Asn Pro Leu Leu Asp Glu Val  
245 250 255  
Ser Leu Lys Gly Ala Lys Ala Val Leu Val Asn Val Thr Gly Gly Met  
260 265 270  
Asp Met Thr Leu Leu Glu Val Asp Glu Ala Ala Asn Ala Ile Ser Asp  
275 280 285  
Gln Val Asp Pro Glu Ala Asn Ile Ile Phe Gly Ala Ala Phe Asp Pro  
290 295 300  
Ser Leu Glu Gly Val Ile Arg Val Ser Val Val Ala Thr Gly Met Asp  
305 310 315 320  
Gly Ala Ser Ile Ala Gln Ile Glu Pro Lys Pro Val Ser Arg Asn Ile  
325 330 335  
Ser Ala Ala Pro Leu Ile Ala Glu Thr Ser Arg Pro Ala Pro Gln Pro

340										345										350																											
Glu	Pro	Ala	Arg	Pro	Thr	Ala	Arg	Tyr	Glu	Ala	Ala	Arg	Pro	Ala	Glu					Glu	Pro	Ala	Arg	Pro	Ala	Glu					Glu	Pro	Ala	Arg	Pro	Ala	Glu										
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Arg	Pro	Val	Ala	Phe	Ala	Pro	Glu	Pro	Ala	Pro	Glu	Pro	Glu	Ile	Val					Arg	Pro	Val	Ala	Phe	Ala	Pro	Glu	Pro	Ala	Glu				Arg	Pro	Val	Ala	Phe	Ala	Pro	Glu	Pro	Ala	Glu			
370										375										380																											
Met	Ser	Ala	Pro	Gln	Pro	Glu	Pro	Glu	Ala	Glu	Leu	Tyr	Tyr	Asp	Glu					Met	Ser	Ala	Pro	Gln	Pro	Glu	Pro	Glu	Ala	Glu	Leu	Tyr	Tyr	Asp	Glu												
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Pro	Thr	Val	Ala	Glu	Glu	Pro	Arg	Val	Ser	Ala	Ala	Pro	Ala	Arg	Ser					Pro	Thr	Val	Ala	Glu	Glu	Pro	Arg	Val	Ser	Ala	Ala	Pro	Ala	Arg	Ser												
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Val	Asn	Arg	Ile	Val	Asp	Pro	Leu	Val	Asp	Asp	Val	Ala	Glu	Glu	Pro					Val	Asn	Arg	Ile	Val	Asp	Pro	Leu	Val	Asp	Asp	Val	Ala	Glu	Glu	Pro												
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Leu	Phe	Pro	Glu	Asn	Asn	Tyr	Tyr	Glu	Glu	Arg	Arg	Pro	Gln	Lys	Gln					Leu	Phe	Pro	Glu	Asn	Asn	Tyr	Tyr	Glu	Glu	Arg	Arg	Pro	Gln	Lys	Gln												
435										440										445																											
Gly	Gly	Phe	Phe	Ser	Met	Phe	Gly	Gly	Gly	Arg	Gln	Arg	Tyr	Glu	Gln					Gly	Gly	Phe	Phe	Ser	Met	Phe	Gly	Gly	Gly	Arg	Gln	Arg	Tyr	Glu	Gln												
450										455										460																											
Gln	Ala	Ser	Ala	Pro	Gln	Ala	Gln	Ala	Arg	Ser	Ala	Gln	Ser	Ala	Arg					Gln	Ala	Ser	Ala	Pro	Gln	Ala	Gln	Ala	Arg	Ser	Ala	Gln	Ser	Ala	Arg												
465										470										475																											
Pro	Gln	Leu	Gln	Pro	Ile	Glu	Thr	Pro	Gln	Ala	Asp	Asp	Ala	Glu	Asp					Pro	Gln	Leu	Gln	Pro	Ile	Glu	Thr	Pro	Gln	Ala	Asp	Asp	Ala	Glu	Asp												
485										490										495																											
Leu	Glu	Ile	Pro	Ser	Phe	Leu	Arg	Arg	Leu	Ala	Asn									Leu	Glu	Ile	Pro	Ser	Phe	Leu	Arg	Arg	Leu	Ala	Asn																
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<210> 16  
 <211> 407  
 <212> PRT  
 <213> Cyanidioschyzon merolae

<400> 16

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1										5										10																	
Cys	Leu	Gly	Ser	Arg	Ala	Leu	Gly	Glu	Ser	Gly	Ser	Ala	Ala	Ala	Val					Cys	Leu	Gly	Ser	Arg	Ala	Leu	Gly	Glu	Ser	Gly	Ser	Ala	Ala	Ala	Val		
20										25										30																	
Ser	Asn	Tyr	Val	Trp	Gln	Arg	Glu	Ala	Ser	Arg	Gly	Phe	Val	Leu	Gly					Ser	Asn	Tyr	Val	Trp	Gln	Arg	Glu	Ala	Ser	Arg	Gly	Phe	Val	Leu	Gly		
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Thr	Arg	Leu	Leu	Pro	Trp	Cys	Pro	Leu	Gly	Ser	Arg	Leu	Leu	His	Ser					Thr	Arg	Leu	Leu	Pro	Trp	Cys	Pro	Leu	Gly	Ser	Arg	Leu	Leu	His	Ser		
50										55										60																	
Pro	Ser	Gln	Thr	Ala	Ser	Val	Ile	Arg	Met	Asn	Thr	Gly	Ser	Phe	Ala					Pro	Ser	Gln	Thr	Ala	Ser	Val	Ile	Arg	Met	Asn	Thr	Gly	Ser	Phe	Ala		
65										70										75																	
Pro	Lys	Pro	Asp	Leu	Gly	Glu	Gln	Gln	Pro	Asn	Thr	Leu	Thr	Gly	Gln					Pro	Lys	Pro	Asp	Leu	Gly	Glu	Gln	Gln	Pro	Asn	Thr	Leu	Thr	Gly	Gln		
85										90										95																	
Pro	Arg	Ile	Met	Val	Val	Gly	Val	Gly	Gly	Ala	Gly	Gly	Asn	Ala	Val					Pro	Arg	Ile	Met	Val	Val	Gly	Val	Gly	Gly	Ala	Gly	Gly	Asn	Ala	Val		
100										105										110																	
Asn	Asn	Met	Ile	Ala	Ser	Ser	Leu	Pro	Gly	Val	Glu	Phe	Leu	Val	Ala					Asn	Asn	Met	Ile	Ala	Ser	Ser	Leu	Pro	Gly	Val	Glu	Phe	Leu	Val	Ala		
115										120										125																	
Asn	Thr	Asp	Ala	Gln	Ala	Leu	Lys	Met	Ser	Leu	Cys	Pro	Asn	Arg	Ile					Asn	Thr	Asp	Ala	Gln	Ala	Leu	Lys	Met	Ser	Leu	Cys	Pro	Asn	Arg	Ile		
130										135										140																	
Gln	Leu	Gly	Ala	Ser	Leu	Thr	Glu	Gly	Leu	Gly	Ala	Gly	Ala	Arg	Pro					Gln	Leu	Gly	Ala	Ser	Leu	Thr	Glu	Gly	Leu	Gly	Ala	Gly	Ala	Arg	Pro		
145										150										155																	
Asp	Ile	Gly	Arg	Ala	Ala	Ala	Glu	Glu	Ala	Tyr	Glu	Thr	Leu	Lys	Arg					Asp	Ile	Gly	Arg	Ala	Ala	Ala	Glu	Glu	Ala	Tyr	Glu	Thr	Leu	Lys	Arg		
165										170										175																	
Glu	Phe	Arg	Gly	Val	His	Leu	Leu	Phe	Val	Thr	Ala	Gly	Met	Gly	Gly					Glu	Phe	Arg	Gly	Val	His	Leu	Leu	Phe	Val	Thr	Ala	Gly	Met	Gly	Gly		
180										185										190																	
Gly	Thr	Gly	Thr	Gly	Ala	Ala	Pro	Ile	Ile	Ala	Arg	Ala	Ala	Ala	Glu					Gly	Thr	Gly	Thr	Gly	Ala	Ala	Pro	Ile	Ile	Ala	Arg	Ala	Ala	Ala	Glu		
195										200										205																	
Leu	Gly	Cys	Leu	Thr	Val	Ala	Val	Val	Thr	Lys	Pro	Phe	His	Phe	Glu					Leu	Gly	Cys	Leu	Thr	Val	Ala	Val	Val	Thr	Lys	Pro	Phe	His	Phe	Glu		
210										215										220																	

Gly Met Ile Arg Met Lys Thr Ala Glu Gln Gly Ile Val Glu Leu Thr  
 225 230 235 240  
 Glu His Val Asp Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Lys  
 245 250 255  
 Val Ala Ser Pro Arg Thr Ser Phe Leu Asp Ala Phe Arg Leu Ala Asp  
 260 265 270  
 His Val Leu Tyr Ser Gly Val Arg Ser Ile Thr Asp Leu Met Thr Val  
 275 280 285  
 Pro Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Val Arg  
 290 295 300  
 Glu Met Gly Arg Ala Met Met Gly Ser Gly Glu Val Glu Met Glu Ala  
 305 310 315 320  
 Gly Asn Glu Glu Arg Ala Ile Arg Ala Ser Glu Ala Ala Ile Cys Asn  
 325 330 335  
 Pro Leu Leu Asp Glu Thr Ser Leu Arg Gly Ala Arg Gly Val Leu Val  
 340 345 350  
 Asn Ile Thr Gly Gly Thr Asp Met Thr Leu Phe Glu Ile Asp Ala Ala  
 355 360 365  
 Ala Asn Arg Ile Arg Glu Gln Val Asp Pro Asp Ala Asn Ile Ile Phe  
 370 375 380  
 Gly Ser Ala Phe Asp Ala Ser Met Gln Gly Arg Leu Arg Val Ser Val  
 385 390 395 400  
 Leu Ala Thr Gly Ile Pro Ser  
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<210> 17

<211> 401

<212> PRT

<213> Mallomonas splendens

<400> 17

Met Arg Ile Thr Gly Ala Asn Arg Ile Leu Ser Leu Ser Arg Ile Arg  
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 20 25 30  
 Lys Pro Gly Val Lys Pro Glu Gln Tyr Asp Ser Arg Ser Gly Asn Ser  
 35 40 45  
 Ser Gln Ala Gln Ser Thr Glu His Val Lys Asp Lys Phe Val Glu Pro  
 50 55 60  
 Gly Asn Leu Arg Phe Arg Thr Gly Glu Tyr Ile Thr Glu Phe Leu Pro  
 65 70 75 80  
 Lys Ile Cys Val Phe Gly Val Gly Gly Gly Gly Cys Asn Ala Val Asn  
 85 90 95  
 Asn Met Ile Ala Arg Lys Leu Ser Gly Val Glu Phe Val Cys Ala Asn  
 100 105 110  
 Thr Asp Ala Gln His Leu Ser Thr Cys Leu Thr Glu Asn Lys Leu Gln  
 115 120 125  
 Leu Gly Lys Glu Ser Thr Gln Gly Leu Gly Cys Gly Ala Asn Pro Glu  
 130 135 140  
 Ser Gly Arg Arg Ala Ala Glu Glu Ser Lys Glu Glu Ile Ala Arg Tyr  
 145 150 155 160  
 Ile Ala Asp Ala Asn Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly  
 165 170 175  
 Thr Gly Thr Gly Ala Ala Pro Val Val Ala Glu Val Cys Met Glu Lys  
 180 185 190  
 Asp Ile Leu Thr Val Ala Val Val Thr Lys Pro Phe Ser Phe Glu Gly





Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Asp Ile Gly Met Asn  
 180 185 190  
 Ala Ala Lys Glu Ser Lys Glu Ala Ile Glu Glu Ala Val Tyr Gly Ala  
 195 200 205  
 Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly  
 210 215 220  
 Gly Ala Pro Val Ile Ala Gly Ile Ala Lys Ser Met Gly Ile Leu Thr  
 225 230 235 240  
 Val Gly Ile Val Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Ala  
 245 250 255  
 Val Gln Ala Gln Glu Gly Ile Ala Ala Leu Arg Asp Asn Val Asp Thr  
 260 265 270  
 Leu Ile Val Ile Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Pro Ser  
 275 280 285  
 Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln  
 290 295 300  
 Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn  
 305 310 315 320  
 Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser  
 325 330 335  
 Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Thr Arg Ala Arg Asp Ala  
 340 345 350  
 Ala Leu Asn Ala Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg  
 355 360 365  
 Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu  
 370 375 380  
 Phe Glu Val Asn Ala Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro  
 385 390 395 400  
 Ser Ala Asn Leu Ile Phe Gly Ala Val Val Asp Pro Ser Leu Cys Gly  
 405 410 415  
 Gln Val Ser Ile Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu  
 420 425 430  
 Ser Asp Lys Arg Ser Ile Gln Ala Gly Gly Gln Leu Ala Pro Gly Asp  
 435 440 445  
 Ala Asn Gln Gly Ile Asn Arg Arg Pro Ser Ser Phe Ser Glu Ser Gly  
 450 455 460  
 Ser Val Glu Ile Pro Glu Phe Leu Arg Lys Lys Gly Arg Ser Arg Tyr  
 465 470 475 480  
 Pro Arg Ala

<210> 19  
 <211> 468  
 <212> PRT  
 <213> Nicotiana tabacum

<400> 19  
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 Met Gln Asp Glu Lys Ile Gly Phe Leu Gly Val Asn Gln Lys Gly Ser  
 35 40 45  
 Ser Ser Leu Pro Gln Phe Lys Cys Ser Ser Asn Ser His Ser Val Asn  
 50 55 60  
 Gln Tyr Gln Asn Lys Asp Ser Phe Leu Asn Leu His Pro Glu Ile Ser

65					70					75				80
Leu	Leu	Arg	Gly	Glu	Glu	Ser	Ser	Ser	Gly	Asn	Val	Thr	Glu	Ser
				85					90					95
Met	Asp	Ser	Ser	Arg	Ser	Asn	Asn	Phe	Asn	Glu	Ala	Lys	Ile	Lys
			100					105					110	Val
Val	Gly	Val	Gly	Gly	Gly	Gly	Ser	Asn	Ala	Val	Asn	Arg	Met	Ile
		115					120					125		Glu
Ser	Ser	Met	Lys	Gly	Val	Glu	Phe	Trp	Ile	Val	Asn	Thr	Asp	Ile
		130				135					140			Gln
Ala	Met	Arg	Met	Ser	Pro	Val	Ala	Ala	Glu	Gln	Arg	Leu	Pro	Ile
145					150					155				160
Gln	Glu	Leu	Thr	Arg	Gly	Leu	Gly	Ala	Gly	Gly	Asn	Pro	Asp	Ile
				165					170					175
Met	Asn	Ala	Ala	Asn	Glu	Ser	Lys	Gln	Ala	Ile	Glu	Glu	Ala	Val
		180						185					190	Tyr
Gly	Ala	Asp	Met	Val	Phe	Val	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr
		195					200					205		Gly
Thr	Gly	Ala	Ala	Pro	Ile	Ile	Ala	Gly	Thr	Ala	Lys	Ser	Met	Gly
	210					215					220			Ile
Leu	Thr	Val	Gly	Ile	Val	Thr	Thr	Pro	Phe	Ser	Phe	Glu	Gly	Arg
225					230				235					240
Arg	Ala	Val	Gln	Ala	Gln	Glu	Gly	Ile	Ala	Ala	Leu	Arg	Glu	Asn
			245						250					255
Asp	Thr	Leu	Ile	Val	Ile	Pro	Asn	Asp	Lys	Leu	Leu	Thr	Ala	Val
		260						265					270	Ser
Pro	Ser	Thr	Pro	Val	Thr	Glu	Ala	Phe	Asn	Leu	Ala	Asp	Asp	Ile
		275					280					285		Leu
Arg	Gln	Gly	Val	Arg	Gly	Ile	Ser	Asp	Ile	Ile	Thr	Ile	Pro	Gly
	290					295					300			Leu
Val	Asn	Val	Asp	Phe	Ala	Asp	Val	Arg	Ala	Ile	Met	Ala	Asn	Ala
305					310					315				320
Ser	Ser	Leu	Met	Gly	Ile	Gly	Thr	Ala	Thr	Gly	Lys	Thr	Arg	Ala
			325						330					335
Asp	Ala	Ala	Leu	Asn	Ala	Ile	Gln	Ser	Pro	Leu	Leu	Asp	Ile	Gly
		340						345					350	Ile
Glu	Arg	Ala	Thr	Gly	Ile	Val	Trp	Asn	Ile	Thr	Gly	Gly	Ser	Asp
		355					360					365		Leu
Thr	Leu	Phe	Glu	Val	Asn	Ala	Ala	Ala	Glu	Val	Ile	Tyr	Asp	Leu
	370					375					380			Val
Asp	Pro	Ser	Ala	Asn	Leu	Ile	Phe	Gly	Ala	Val	Ile	Asp	Pro	Ser
385					390					395				400
Ser	Gly	Gln	Val	Ser	Ile	Thr	Leu	Ile	Ala	Thr	Gly	Phe	Lys	Arg
			405						410					415
Glu	Glu	Ser	Asp	Gly	Arg	Pro	Leu	Gln	Gly	Asn	Gln	Leu	Thr	Gln
		420						425					430	Gly
Asp	Val	Ser	Leu	Gly	Asn	Asn	Arg	Arg	Pro	Ala	Ser	Phe	Leu	Glu
		435					440					445		Gly
Gly	Ser	Val	Glu	Ile	Pro	Glu	Phe	Leu	Arg	Lys	Lys	Gly	Arg	Ser
	450					455					460			Arg
Tyr	Pro	Arg	Ala											
465														

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 <212> PRT  
 <213> Arabidopsis thaliana

<400> 20

<210> 21

<211> 458

<212> PRT



Thr Gly Leu Ser Gln Gly Ser Asn Gly Ser Ala Ile Asn Ile Pro Ser  
 435 440 445  
 Phe Leu Arg Lys Arg Gly Gln Thr Arg His  
 450 455

<210> 22  
 <211> 464  
 <212> PRT  
 <213> Physcomitrella patens

<400> 22  
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 Ser Arg Val Gly Gly Glu Ser Ser Arg Ile Val Pro Ala Thr Arg Asp  
 20 25 30  
 Arg Phe Cys Val His Leu Arg Pro Ser Thr Arg Ala His Arg Arg Leu  
 35 40 45  
 Asp Arg Thr Val Gly Asn Glu Ser Leu Cys Thr Pro Arg Glu Arg Asp  
 50 55 60  
 Leu Ala Ala Glu Pro Lys Phe Leu His Thr Gly Trp Glu Ser Ser Ser  
 65 70 75 80  
 Ser Ser Ser Ser Ser Ser Cys Glu Thr Gly Ile Pro Val Thr Ala Phe  
 85 90 95  
 Gly Gly Asn Gly Asp Glu Tyr Glu Ser Ser Asn Glu Ala Lys Ile Lys  
 100 105 110  
 Val Ile Gly Val Gly Gly Gly Gly Ser Asn Ala Val Asn Arg Met Leu  
 115 120 125  
 Glu Ser Glu Met Gln Gly Val Glu Phe Trp Ile Val Asn Thr Asp Ala  
 130 135 140  
 Gln Ala Met Ala Leu Ser Pro Val Pro Ala Gln Asn Arg Leu Gln Ile  
 145 150 155 160  
 Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Glu Ile  
 165 170 175  
 Gly Cys Ser Ala Ala Glu Glu Ser Lys Ala Met Val Glu Glu Ala Leu  
 180 185 190  
 Arg Gly Ala Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr  
 195 200 205  
 Gly Ser Gly Ala Ala Pro Ile Ile Ala Gly Val Ala Lys Gln Leu Gly  
 210 215 220  
 Ile Leu Thr Val Gly Ile Val Thr Thr Pro Phe Ala Phe Glu Gly Arg  
 225 230 235 240  
 Arg Arg Ser Val Gln Ala His Glu Gly Ile Ala Ala Leu Lys Asn Asn  
 245 250 255  
 Val Asp Thr Leu Ile Thr Ile Pro Asn Asn Lys Leu Leu Thr Ala Val  
 260 265 270  
 Ala Gln Ser Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile  
 275 280 285  
 Leu Arg Gln Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Val Pro Gly  
 290 295 300  
 Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala  
 305 310 315 320  
 Gly Ser Ser Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Ser Lys Ala  
 325 330 335  
 Arg Glu Ala Ala Leu Ser Ala Ile Gln Ser Pro Leu Leu Asp Val Gly  
 340 345 350  
 Ile Glu Arg Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp



Asp Phe Pro Ile Glu Lys Ala Arg Gly Ile Val Phe Asn Ile Thr Gly  
 290 295 300  
 Gly Gln Asp Met Thr Leu His Glu Ile Asn Ser Ala Ala Glu Val Ile  
 305 310 315 320  
 Tyr Glu Ala Val Asp Ser Asn Ala Asn Ile Ile Phe Gly Ala Leu Val  
 325 330 335  
 Asp Asp Asn Met Glu Asn Glu Ile Ser Ile Thr Val Val Ala Thr Gly  
 340 345 350  
 Phe Thr Gln Pro Asn Asp Ser Lys Phe Phe Ser Thr Lys Ser Ala Val  
 355 360 365  
 Asp Phe Ser Lys Ile Tyr Asp Asn Lys Lys Thr Lys Ser Thr Tyr Lys  
 370 375 380  
 Glu Ser Arg Ala Glu Phe Ser Asp Leu Trp Lys Lys Phe Tyr  
 385 390 395

<210> 24  
 <211> 368  
 <212> PRT  
 <213> Mallomonas splendens

<400> 24  
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 Leu Gly Ala Gly Gly Asn Pro Ala Ile Gly Ala Lys Ala Ala Glu Glu  
 35 40 45  
 Ser Arg Glu Glu Ile Met Ala Val Val Lys Asn Ala Asp Leu Val Phe  
 50 55 60  
 Val Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val  
 65 70 75 80  
 Val Ala Glu Cys Ala Lys Glu Ala Gly Ala Leu Thr Val Gly Val Val  
 85 90 95  
 Thr Lys Pro Phe Gly Phe Glu Gly Arg Lys Arg Met Gln Gln Ala Arg  
 100 105 110  
 Asn Ala Ile Leu Glu Met Lys Asp Lys Val Asp Thr Leu Ile Val Val  
 115 120 125  
 Ser Asn Asp Lys Leu Leu Lys Ile Val Pro Asp Asn Thr Pro Leu Thr  
 130 135 140  
 Glu Ala Phe Leu Val Ala Asp Asp Ile Leu Arg Gln Gly Val Val Gly  
 145 150 155 160  
 Ile Thr Glu Ile Ile Val Lys Pro Gly Leu Val Asn Val Asp Phe Ala  
 165 170 175  
 Asp Val Arg Thr Ile Met Gly Asn Ala Gly Thr Ala Leu Met Gly Ile  
 180 185 190  
 Gly His Gly Lys Gly Lys Asn Arg Ala Lys Asp Ala Ala Leu Ser Ala  
 195 200 205  
 Ile Ser Ser Pro Leu Leu Asp Phe Pro Ile Thr Arg Ala Lys Gly Ile  
 210 215 220  
 Val Phe Asn Ile Val Gly Gly Ser Asp Met Ser Leu Gln Glu Ile Asn  
 225 230 235 240  
 Ala Ala Ala Glu Val Ile Tyr Glu Asn Val Asp Gln Asp Ala Asn Ile  
 245 250 255  
 Ile Phe Gly Ala Met Val Asp Asp Lys Met Thr Ser Gly Glu Val Ser  
 260 265 270  
 Ile Thr Val Leu Ala Thr Gly Phe Ser Thr Asp Tyr Phe Ser Asn Asp



		275					280					285				
Gly	Ser	Gly	Leu	Glu	Asn	Leu	Pro	Pro	Asn	Arg	Leu	Ser	Pro	Pro	Lys	
	290					295					300					
Thr	Val	Gly	Ser	Ala	Lys	Ser	Tyr	Ser	Glu	Tyr	Glu	Pro	Pro	Ser	Thr	
305					310					315					320	
Pro	Lys	Ala	Glu	Glu	Arg	Asp	Ser	Glu	Tyr	Leu	Ser	Ala	Asp	Asp	Leu	
				325					330					335		
Thr	Asp	Glu	Ser	Lys	Glu	Arg	Asp	Gln	Asp	Gly	Lys	Lys	Asp	Glu	Glu	
			340					345					350			
Lys	Pro	Lys	Gly	Gly	Gly	Phe	Arg	Gly	Phe	Ile	Lys	Arg	Leu	Phe	Ser	
		355					360					365				

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<210> 25
<211> 428
<212> PRT
<213> Anabaena PCC7120
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Ser Ile Glu Gly Ala Arg Gly Val Val Phe Asn Ile Thr Gly Gly Ser  
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 Asp Leu Thr Leu His Glu Val Asn Ala Ala Glu Thr Ile Tyr Glu  
 325 330 335  
 Val Val Asp Pro Asn Ala Asn Ile Ile Phe Gly Ala Val Ile Asp Asp  
 340 345 350  
 Arg Leu Gln Gly Glu Val Arg Ile Thr Val Ile Ala Thr Gly Phe Thr  
 355 360 365  
 Gly Glu Ile Gln Ala Ala Pro Gln Gln Asn Ala Ala Asn Ala Arg Val  
 370 375 380  
 Val Ser Ala Pro Pro Lys Arg Thr Pro Thr Gln Thr Pro Leu Thr Asn  
 385 390 395 400  
 Ser Pro Ala Pro Thr Pro Glu Pro Lys Glu Lys Ser Gly Leu Asp Ile  
 405 410 415  
 Pro Asp Phe Leu Gln Arg Arg Arg Pro Pro Lys Asn  
 420 425

<210> 26  
 <211> 430  
 <212> PRT  
 <213> Synechocystis PCC6803

<400> 26  
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 20 25 30  
 Ser Ile Val Asp Asn Glu Pro Leu Glu Ala Leu Val Glu Thr Pro Thr  
 35 40 45  
 Phe Ala Ser Pro Ser Pro Asn Leu Lys Arg Asp Gln Ile Val Pro Ser  
 50 55 60  
 Asn Ile Ala Lys Ile Lys Val Ile Gly Val Gly Gly Gly Cys Asn  
 65 70 75 80  
 Ala Val Asn Arg Met Ile Ala Ser Gly Val Thr Gly Ile Asp Phe Trp  
 85 90 95  
 Ala Ile Asn Thr Asp Ser Gln Ala Leu Thr Asn Thr Asn Ala Pro Asp  
 100 105 110  
 Cys Ile Gln Ile Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly  
 115 120 125  
 Asn Pro Ala Ile Gly Gln Lys Ala Ala Glu Glu Ser Arg Asp Glu Ile  
 130 135 140  
 Ala Arg Ser Leu Glu Gly Thr Asp Leu Val Phe Ile Thr Ala Gly Met  
 145 150 155 160  
 Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Ile Val Ala Glu Val Ala  
 165 170 175  
 Lys Glu Met Gly Cys Leu Thr Val Gly Ile Val Thr Arg Pro Phe Thr  
 180 185 190  
 Phe Glu Gly Arg Arg Arg Ala Lys Gln Ala Glu Glu Gly Ile Asn Ala  
 195 200 205  
 Leu Gln Ser Arg Val Asp Thr Leu Ile Val Ile Pro Asn Asn Gln Leu  
 210 215 220  
 Leu Ser Val Ile Pro Ala Glu Thr Pro Leu Gln Glu Ala Phe Arg Val  
 225 230 235 240  
 Ala Asp Asp Ile Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile  
 245 250 255  
 Ile Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Val





165 170 175  
 Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe Ser Phe Glu  
 180 185 190  
 Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu Lys Leu Gln  
 195 200 205  
 Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg Leu Leu Asp  
 210 215 220  
 Ile Ala Asp Glu Gln Met Pro Leu Gln Asp Ala Phe Arg Leu Ala Asp  
 225 230 235 240  
 Asp Val Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile  
 245 250 255  
 Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala Val Met Lys  
 260 265 270  
 Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser Gly Lys Asn  
 275 280 285  
 Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro Leu Ile Gly  
 290 295 300  
 Ser Ser Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile Thr Gly Gly  
 305 310 315 320  
 Lys Asp Ile Thr Leu Gln Glu Val Asn Arg Val Ser Gln Val Val Thr  
 325 330 335  
 Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala Val Val Asp  
 340 345 350  
 Asp Arg Tyr Thr Gly Glu Ile His Val Thr Ile Ile Ala Thr Gly Phe  
 355 360 365  
 Ser Gln Ser Phe Gln Lys Lys Leu Leu Thr Asp Pro Arg Ala Ala Lys  
 370 375 380  
 Leu Leu Asp Lys Val Ala Glu Gly Lys Glu Ser Lys Thr Val Pro Pro  
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 405 410 415  
 Pro Pro Arg Lys Leu Phe Phe  
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 <212> PRT  
 <213> Nicotiana tabacum

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 Phe Ala Phe Tyr His Ser Ser Phe Ile Pro Lys Gln Cys Cys Phe Thr  
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 Lys Ala Arg Arg Lys Ser Leu Cys Lys Pro Gln Arg Phe Ser Ile Ser  
 35 40 45  
 Ser Ser Phe Thr Pro Phe Asp Ser Ala Lys Ile Lys Val Ile Gly Val  
 50 55 60  
 Gly Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu  
 65 70 75 80  
 Gln Gly Val Asp Phe Tyr Ala Ile Asn Thr Asp Ala Gln Ala Leu Leu  
 85 90 95  
 Gln Ser Ala Ala Glu Asn Pro Leu Gln Ile Gly Glu Leu Leu Thr Arg  
 100 105 110  
 Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu  
 115 120 125

Glu	Ser	Lys	Glu	Ala	Ile	Ala	Asn	Ser	Leu	Lys	Gly	Ser	Asp	Met	Val
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Phe	Ile	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr	Gly	Ser	Gly	Ala	Ala	Pro
145					150					155					160
Val	Val	Ala	Gln	Ile	Ala	Lys	Glu	Ala	Gly	Tyr	Leu	Thr	Val	Gly	Val
				165					170					175	
Val	Thr	Tyr	Pro	Phe	Ser	Phe	Glu	Gly	Arg	Lys	Arg	Ser	Val	Gln	Ala
			180					185					190		
Leu	Glu	Ala	Ile	Glu	Lys	Leu	Gln	Lys	Asn	Val	Asp	Thr	Leu	Ile	Val
		195					200				205				
Ile	Pro	Asn	Asp	Arg	Leu	Leu	Asp	Ile	Ala	Asp	Glu	Gln	Thr	Pro	Leu
	210					215					220				
Gln	Asp	Ala	Phe	Leu	Leu	Ala	Asp	Asp	Val	Leu	Arg	Gln	Gly	Val	Gln
225					230					235					240
Gly	Ile	Ser	Asp	Ile	Ile	Thr	Ile	Pro	Gly	Leu	Val	Asn	Val	Asp	Phe
			245						250					255	
Ala	Asp	Val	Lys	Ala	Val	Met	Lys	Asp	Ser	Gly	Thr	Ala	Met	Leu	Gly
			260					265					270		
Val	Gly	Val	Ser	Ser	Ser	Lys	Asn	Arg	Ala	Glu	Glu	Ala	Ala	Glu	Gln
		275					280					285			
Ala	Thr	Leu	Ala	Pro	Leu	Ile	Gly	Ser	Ser	Ile	Gln	Ser	Ala	Thr	Gly
	290					295					300				
Val	Val	Tyr	Asn	Ile	Thr	Gly	Gly	Lys	Asp	Ile	Thr	Leu	Gln	Glu	Val
305				310						315					320
Asn	Arg	Val	Ser	Gln	Val	Val	Thr	Ser	Leu	Ala	Asp	Pro	Ser	Ala	Asn
			325						330					335	
Ile	Ile	Phe	Gly	Ala	Val	Val	Asp	Glu	Arg	Tyr	Asn	Gly	Glu	Ile	His
			340					345					350		
Val	Thr	Ile	Ile	Ala	Thr	Gly	Phe	Thr	Gln	Ser	Phe	Gln	Lys	Thr	Leu
		355				360						365			
Leu	Ser	Asp	Pro	Arg	Gly	Ala	Lys	Leu	Ala	Asp	Lys	Gly	Pro	Val	Ile
	370					375					380				
Gln	Glu	Ser	Met	Ala	Ser	Pro	Val	Thr	Leu	Arg	Ser	Ser	Thr	Ser	Pro
385					390					395					400
Ser	Thr	Thr	Ser	Arg	Thr	Pro	Thr	Arg	Arg	Leu	Phe	Phe			
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Ser	Pro	Ser	Ser	Thr	Ser	Phe	Ala	Phe	Tyr	His	Ser	Ser	Phe	Ile	Pro	
			20					25					30			
Lys	Gln	Cys	Cys	Phe	Thr	Lys	Ala	Arg	Arg	Lys	Ser	Leu	Cys	Lys	Pro	
		35					40					45				
Gln	Arg	Phe	Ser	Ile	Ser	Ser	Ser	Phe	Thr	Pro	Phe	Asp	Ser	Ala	Lys	
	50					55					60					
Ile	Lys	Val	Ile	Gly	Val	Gly	Gly	Gly	Gly	Asn	Asn	Ala	Val	Asn	Arg	
65				70						75				80		
Met	Ile	Gly	Ser	Gly	Leu	Gln	Gly	Val	Asp	Phe	Tyr	Ala	Ile	Asn	Thr	
				85					90					95		
Asp	Ala	Gln	Ala	Leu	Leu	Gln	Ser	Ala	Ala	Glu	Asn	Pro	Leu	Gln	Ile	



Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe  
 65 70 75 80  
 Tyr Ala Val Asn Thr Asp Ala Gln Ala Leu Gln Ser Thr Val Glu  
 85 90 95  
 Asn Pro Ile Gln Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly  
 100 105 110  
 Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu His  
 115 120 125  
 Ile Ala Asn Ala Leu Lys Gly Ser Asp Met Val Phe Ile Thr Ala Gly  
 130 135 140  
 Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile  
 145 150 155 160  
 Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe  
 165 170 175  
 Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu  
 180 185 190  
 Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg  
 195 200 205  
 Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu Gln Asn Ala Phe Leu  
 210 215 220  
 Leu Ala Asp Asp Val Leu Cys Gln Gly Val Gln Gly Ile Ser Asp Ile  
 225 230 235 240  
 Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala  
 245 250 255  
 Ile Met Lys Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser  
 260 265 270  
 Ser Arg Asn Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro  
 275 280 285  
 Leu Ile Gly Leu Ser Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile  
 290 295 300  
 Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val Asn Lys Val Ser Gln  
 305 310 315 320  
 Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala  
 325 330 335  
 Val Val Asp Glu Arg Tyr Asn Gly Glu Ile Gln Val Thr Leu Ile Ala  
 340 345 350  
 Thr Gly Phe Ala Gln Ser Phe Gln Asn Ser Leu Leu Thr Asp Pro Arg  
 355 360 365  
 Gly Ala Lys Leu Val Asp Lys Ser Lys Gly Thr Thr Glu Arg Thr Val  
 370 375 380  
 Ser Pro Asp Thr Leu Arg Ser Ser Glu Ser Pro Ser Thr Lys Pro Arg  
 385 390 395 400  
 Pro Ala Ala Arg Arg Leu Phe Phe  
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<210> 32

<211> 413

<212> PRT

<213> Nicotiana tabacum

<400> 32

Met Ala Thr Met Leu Gly Leu Ser Ser Asn Thr Gly Ile Asp Ile Leu  
 1 5 10 15  
 Ser Ser Ser Ser Asn Ser Leu Ser Phe Tyr His Ser Thr Arg Phe Thr  
 20 25 30  
 Gln Cys Phe Ser Pro Lys Ser Leu Cys Lys Arg Gln Arg Arg Arg Phe



